



Competition details

	Evaluation item	Detail	Cut-Off	Score
Exercise1	<p>Equipment Repair (Troubleshooting)</p> 	Electrical circuit Troubleshooting + PLC Program	<i>Troubleshooting</i> <i>TM TL 13 Menit</i> <i>PLC Program</i> <i>TM TL cut off 30 min</i>	50 Points
Exercise2	<p>Plate Making</p> 	Making the plate by hand finishing for mounting parts into the plate (FY24 + Bending Process)	TL & TM 30 Min. (TL : Assy Part CP + LED +LS+Bending) (TM : Assy Part CP +LS+Bending)	50 Points

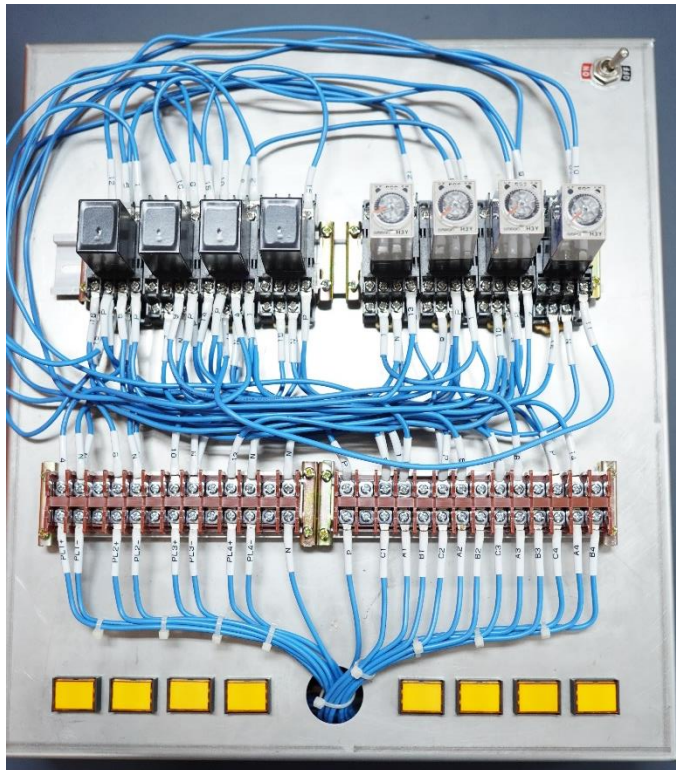
Competition details

Evaluation item	Detail	Cut-Off	Score
Equipment Repair (Troubleshooting)	Electrical circuit Troubleshooting & PLC Program	TL & TM 30 Min. (TL : Assy Part CP + LED +LS+Bending) (TM : Assy Part CP +LS+Bending)	50 Points

FLOW Activity

1. Trouble Shooting Activity (TM 13 Menit & TL 13 Menit)

Repair / Trouble Shooting



2. PLC Program (cut off 30 Menit)

PLC Program



FLOW Activity

1. Time & Rule

A	B	C	D	E	F	Total
Rule Explanation	Preparation	Test Project - Troubleshooting	Test Project - PLC Program	Cleaning Operation	Penilaian	
5	5	TM/TL 13Min	Cut Off 30 Min from item C	3	10	53 Menit

A. Rule Explanation (5 Menit)

- Peserta datang ke tempat lomba. Juri akan mengundi posisi meja dari masing-masing peserta.
- Juri akan menjelaskan terkait detail dan rule perlombaan yang akan dilakukan.
- Peserta mengumpulkan handphonenya kepada juri.

B. Preparation (5 Menit)

Yang boleh dilakukan:

- Peserta diperbolehkan mengganti Tools yang digunakan sesuai dengan ketentuan yang berlaku.
- Referee akan mengecek laptop dan melakukan Erase all program yang ada di PC
- Mengecek kondisi tools dalam keadaan baik dan bisa digunakan.
- Mengecek kondisi material dan memastikan tidak ada material yang kurang ataupun cacat. (Relay Good, Timer Good, Scoon 6Pcs, Kabel Merah 1 Meter.

- Apabila terdapat material yang belum lengkap, peserta bisa memintanya kepada panitia.
- Peserta diwajibkan mengecek koneksi antara PC dengan PLC dengan mentrasfer program kosong ke PLC dan disaksikan oleh Referee yang bertugas.

Yang tidak boleh dilakukan:

- Membuka kain penutup device.
- Mengaktifkan breaker .device troubleshooting

FLOW Activity

C. Test Project Troubleshooting.

- Standard waktu untuk item **C** TM 13, TL 13 Menit, Item D Cut off di 30 menit.
- Peserta Menekan tombol start Timer Ketika lomba dimulai.
- Selama Proses perlombaan, peserta diwajibkan untuk menggunakan APD yang berlaku seperti Kacamata Safety, Sarung Tangandan Arm cover.
- Juri akan memberikan peringatan waktu ketika waktu tersisa 3 dan 1 Menit dari waktu normal.
- Peserta memulai pekerjaan dengan membuka penutup kain.
- Peserta melakukan pengecekan terhadap device, dan melakukan pergantian terhadap part yang rusak.
- Untuk TM: Terdapat 4 total kerusakan, 2 Part (relay&Timer) dan 2 Kabel.
- Untuk TL: Terdapat 5 total kerusakan, 3 Part (relay&Timer) dan 2 Kabel.
- Untuk Part hanya **A PUTUS, B PUTUS dan COIL PUTUS**. Untuk Kabel hanya **Kabel Putus, Kabel Hilang & Salah Kontak**.
- Part yang rusak diletakkan di nampan merah, termasuk potongan kabel dan sisa kabel.
- Untuk Scoon, Relay, dan Timer Good yang tidak digunakan, tetap diletakkan di nampan biru.
- Ketika peserta sudah selesai mengerjakan Test Project, Peserta menuliskan nomor peserta di pada kertas kerja(Contoh **03**). Peserta Mematikan bracker, kondisi stop kontak tidak perlu dicabut.

- Peserta mengangkat tangan dan menekan timer stop.
- 2s boleh dilakukan dalam range waktu 30 menit.
- Ketika finish, kondisi device **tidak** tertutup dengan kain.
- Peserta yang sudah finish langsung menuju meja PLC Program untuk memulai pekerjaan berikutnya.

D. Test Project PLC Program.

- Peserta Menekan tombol start Timer Ketika lomba dimulai
- Peserta melakukan program sesuai dengan soal yang ada dikertas dengan.
- Soal Programming dibuat oleh Delegator.
- Selama Proses perlombaan, peserta diwajibkan untuk menggunakan APD yang berlaku seperti Kacamata Safety, Sarung Tangan dan Arm cover. (Peserta diperbolehkan untuk melepas sarung tangan Ketika proses programming & Trial program, Kecuali Ketika proses mengaktifkan dan mematikan breaker).
- Ketika peserta sudah selesai mengerjakan Test Project, Peserta menuliskan nomor peserta di pada kertas kerja(Contoh **03**).Ketika selesai, kondisi stop kontak tidak perlu dicabut, dan PLC dalam keadaan Run.
- Peserta mengangkat tangan dan mengucapkan "Finish" secara lantang dan menekan timer stop.
- Kondisi Laptop dan PLC dalam keadaan On Ketika finish.

FLOW Activity

E. Cleaning Operation (3 Menit)

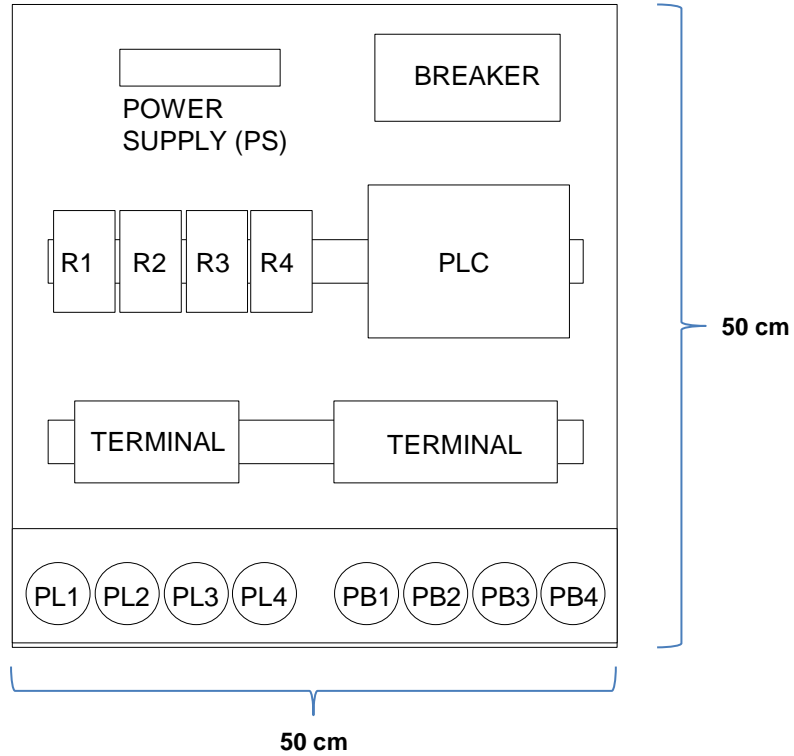
- Ketika semua peserta telah selesai mengerjakan test project atau waktu total sudah habis (Troubleshooting dan Program PLC 30 menit), maka juri akan memulai **Cleaning Operation**.
- **Hal Yang boleh dikerjakan**
 - Peserta memulai cleaning operation dengan membersihkan dan menata kembali tempat kerja.
 - Part yang rusak diletakkan di nampan merah, termasuk potongan kabel dan sisa kabel.
 - Untuk Scoon, Relay, dan Timer Good yang tidak digunakan, tetap diletakkan di nampan biru.
 - Menata tool yang telah selesai digunakan, semua tools berada di dalam area kain biru.
- **Hal yang tidak boleh dikerjakan.**
 - Menyentuh dan melakukan perbaikan di area device.
 - Tidak boleh 2s area Device.
 - Mematikan atau menghidupkan braker device (Untuk area PLC, bracker PLC dibiarkan kondisi Run, Laptop On dan Device ON)
 - Ketika waktu 3 menit selesai, maka referee station akan mengecek kondisi area, dan melakukan penilaian station
- Referee melakukan konfirmasi kepada Athlet mengenai point pengurangan.
- Apabila sudah setuju semuanya, Referee dan Athlet melakukan tanda tangan pada form penilaian.

F. Penilaian (10 Menit)

- Referee Workpiece akan melakukan penilaian sesuai pembagian penilaian masing2.
- Setelah selesai penilaian, Referee melakukan reset kondisi. Troubleshooting device dikembalikan ke kondisi trouble soal, dan PC programming dilakukan erase all program.

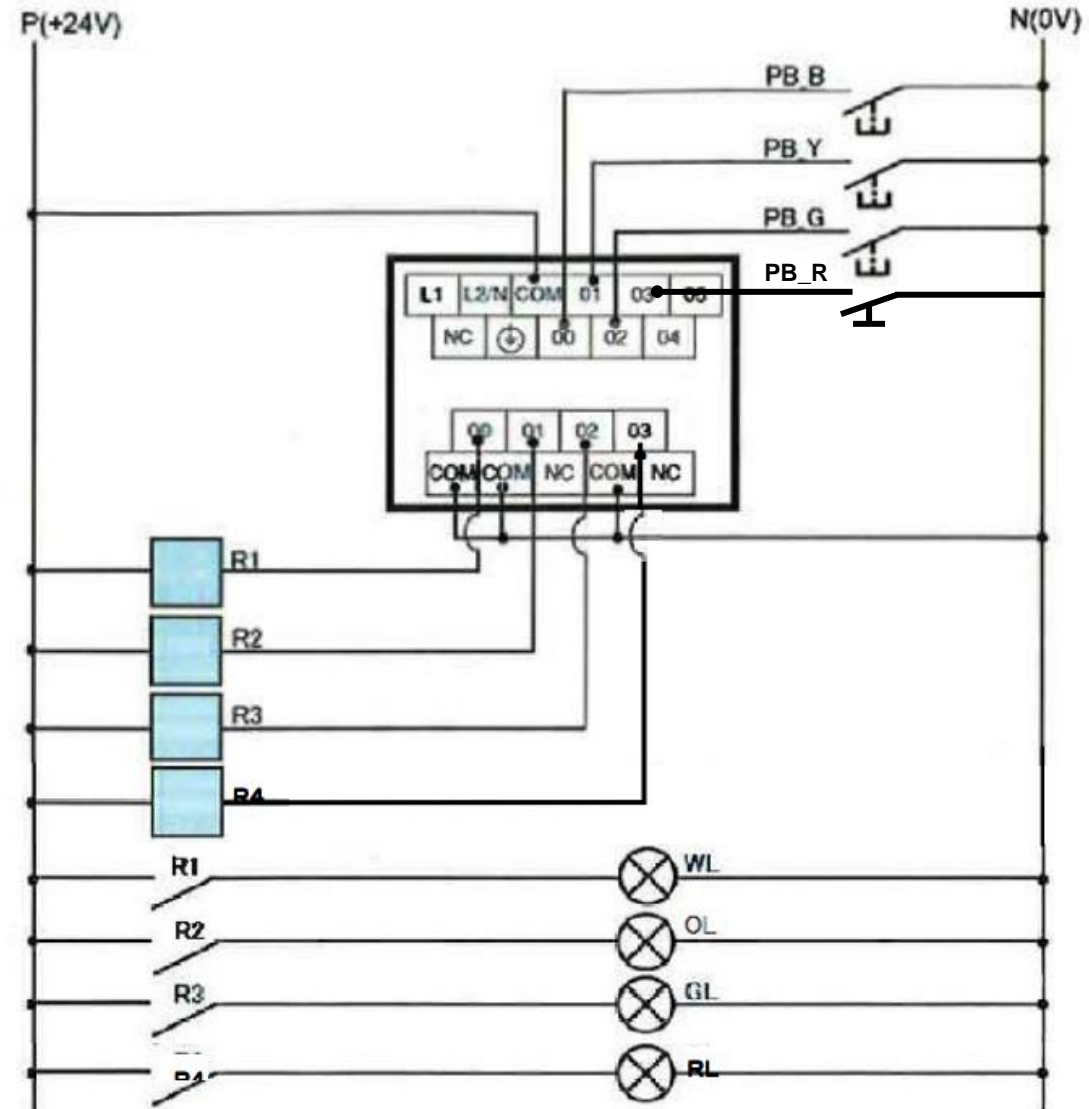
SUBJECT 3 - PLC PROGRAMMING

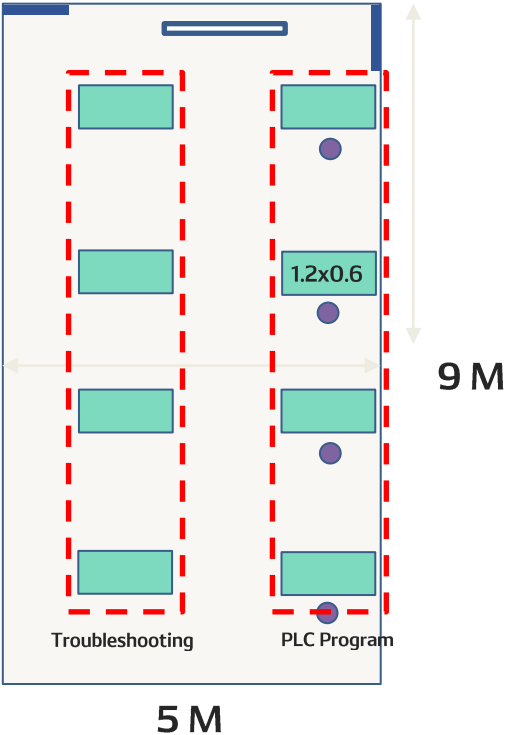
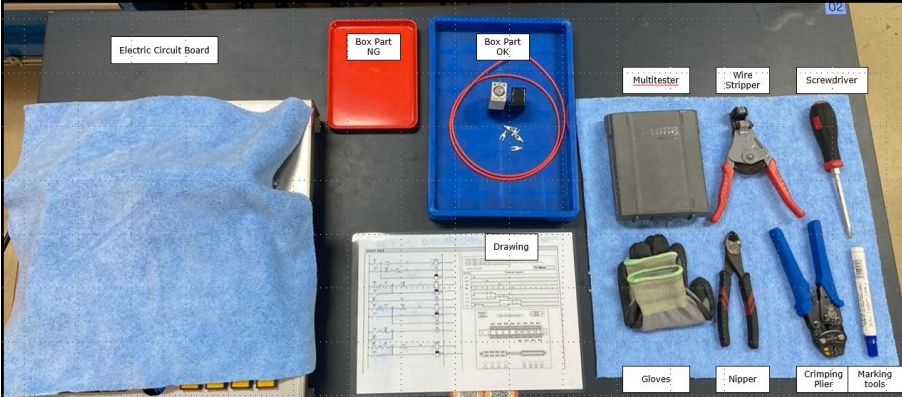
1. Layout Device



- 0.00 PB1 : Black (PB B)
- 0.01 PB2 : Yellow (PB Y)
- 0.02 PB3 : Green (PB G)
- 0.03 PB4 : Red (PB R)
- 1.00 PL1 : White (WL)
- 1.01 PL2 : Orange (OL)
- 1.02 PL3 : Green (GL)
- 1.03 PL4 : Red (RL)

2. Wiring Diagram

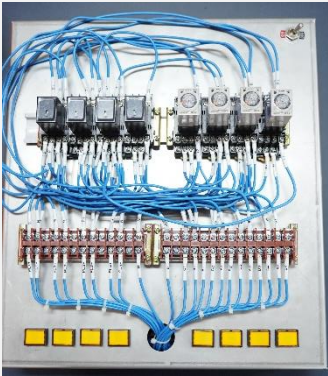
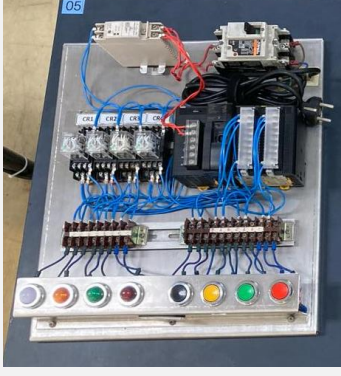






Area Layout	Troubleshooting Table	PLC Program Table
 <p>The diagram shows a rectangular area with a width of 5 M and a height of 9 M. It is divided into two main sections: 'Troubleshooting' on the left and 'PLC Program' on the right. Each section contains four green rectangular blocks. A red dashed line outlines the 'PLC Program' section, which is labeled '1.2x0.6'. A double-headed arrow indicates the 9 M height, and another indicates the 5 M width.</p>	 <p>A photograph of a workspace for troubleshooting. It includes an 'Electric Circuit Board' covered with a blue cloth, a red 'Box Part NG' container, a blue 'Box Part OK' container, a 'Multitester', 'Wire Stripper', 'Screwdriver', 'Gloves', 'Nipper', 'Crimping Plier', and 'Marking tools'. A 'Drawing' is also visible.</p> <p>Note: *Sarung Tangan diluar dan di dalam diganti kuas</p>	 <p>A photograph of a PLC (Programmable Logic Controller) unit with various wires connected to its terminals. Next to it is a black 'DENSO' bag and a small black box labeled '90'.</p>

MTN Exercise 1 : Equipment Repair









MASIF Y2024

Tools

No.	1	2	4	5	6	7
Part name	Electric circuit board	Programing PLC	Repair relay, timer	Waster cloth	Repair wires	Crimping terminal
Specification	8 units for relay and timer	OMRON CJ2M CPU11 12In 12Out	MY-4N-GS, H3Y (10 sec)	400 mm.	1.5 SQ	Y 1.5-3S
Q'ty	1	1Set	Proper Qt'y	2	Proper Qt'y (1m)	Proper Qt'y (6pcs)
Picture						
Preparing	Denso	Denso	Denso	Denso	Denso	Denso
Remark	Reference to exercise condition	With 4 PB and 4 Lamp already Wired			-	-

MTN Exercise 1 : Equipment Repair


MASIF Y2024

Tools (Contestant Prepared)										
No.	1	2	3	4	5	6	7	8	9	10
Part name	Laptop	PLC Program Software	PLC connection cable	Crimping plier	Wire stripper	Nipper	Screwdriver	Radio plier	Multi-tester (circuit check)	Stationery (pencil ,eraser)
Specific ation	Windows XP Ver 7 or up (Lenovo B40-80 Win 10 64bit)	v9.75 CX Programmer	USB 2.0 / USB 3.0	Hozan p-725	Vessel 3000B	N-12	TONE PGPD-002	ARP-150	Sanwa YX-360 or 3030-10	
Q'ty				1	1	1	1	1	1	1 each
Picture										
Preparin g	○ Denso	○ Denso	Denso	○ Denso	○ Denso	○ Denso	○ Denso		○ Denso	○ Denso
Remark	Not save any data like circuit program, etc.	Complete installed to PC						Not Use	Digital tester acceptable	Pencil ,Eraser

○ Contestant allowed bring tools by themselves

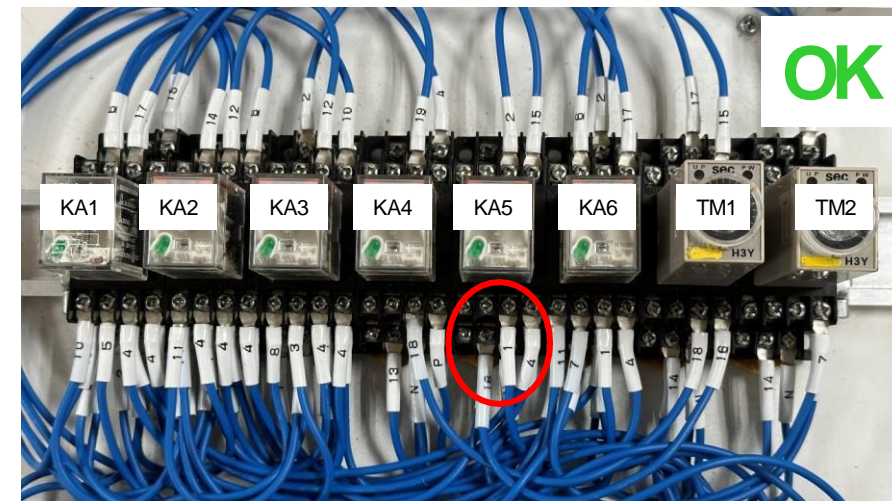
Tools : Penambahan Kuas

Troubleshooting

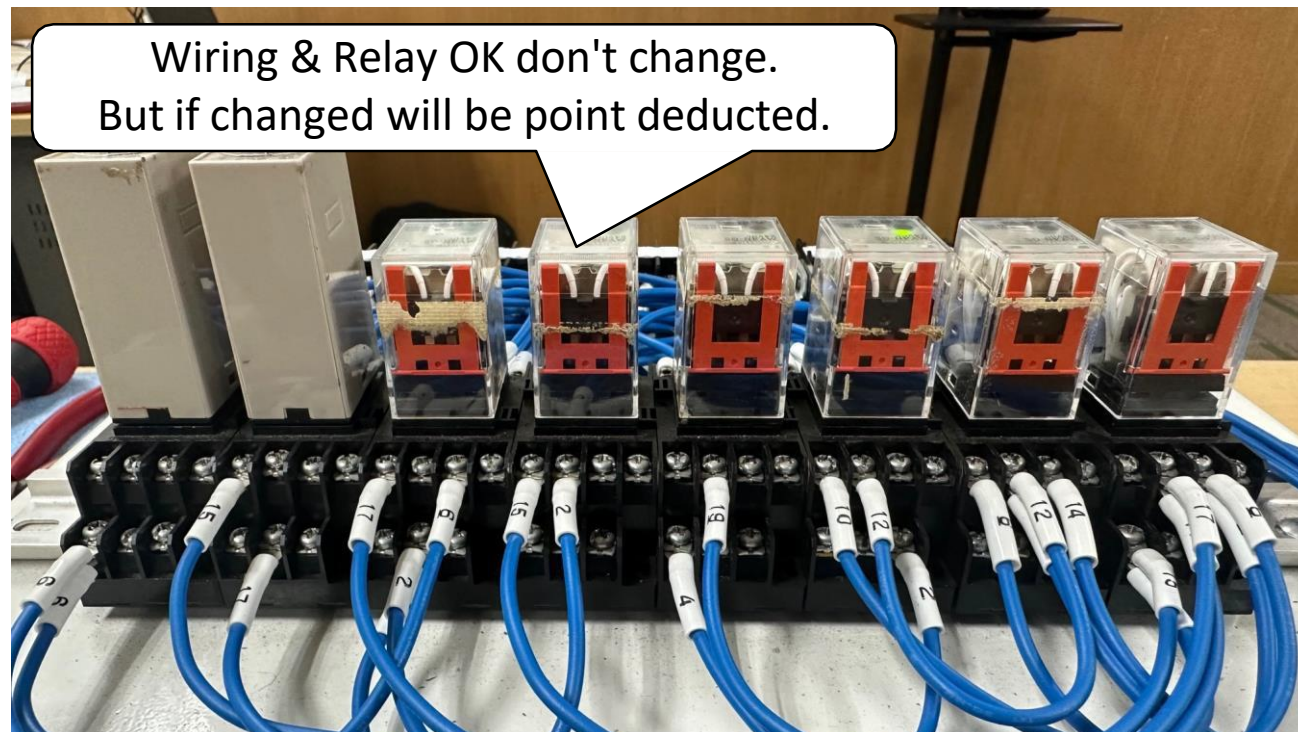
No.	12	13	14
Part name	Set Timer NG	Set Relay NG	Filler Gauge
Specific ation	H3Y-4 30 Sec (Coil Putus, A gagal -line 1,2,3, B gagal line 1,2,)	MY4N 24VDC (Coil Putus, A gaga -line 1,2,3,4, B gagal line 1,2,3,4)	Size 1mm & 0.5mm
Q'ty	30 Pcs	45 Pcs	1Pcs
Picture			
Preparin g	Denso	Denso	Denso
Remark			

Scoring [Troubleshooting]

Item	Ranking criteria [Deducted]					
	A rank	B rank	C rank	D rank	E rank	F rank
	0 point	3 point	6 point	9 point	12 point	15 point
1. Operation, treatment	Normal operation	Malfunction	Malfunction output	Malfunction output	Malfunction output	Malfunction output
	Proper treatment	Timer setting NG, etc.	Improper treatment 1 location	Improper treatment 2 locations	Improper treatment 3 locations	Improper treatment 4 locations or more

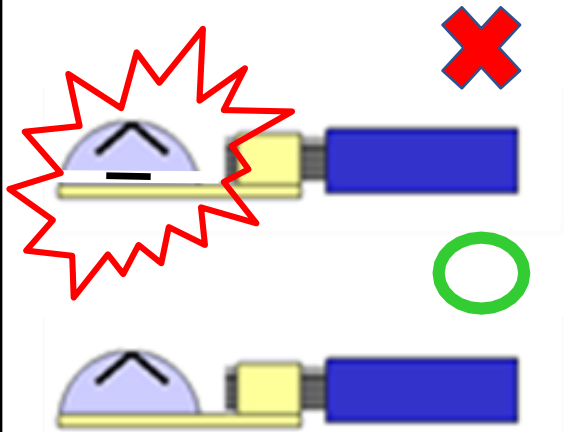


Item	How	Ranking criteria			
		A rank	B rank	C rank	D rank
		0 point	2 point	4 point	6 point
3. Use of unnecessary wiring, relays, equipment		No	1 Position	2 Positions	3 Positions or more



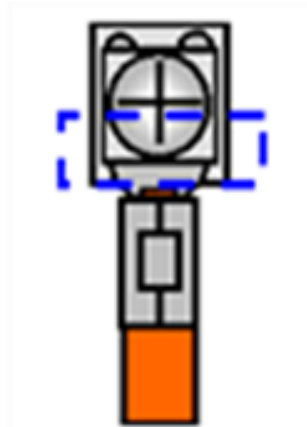
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
4. Wiring, Wiring connection	All is correct	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item]

Work Key Point	Picture	Reson	Effect
A : Is fitting screw loose or not? (Position that is related to repair)		It is cause of It easy to loose.	May cause of short circuit.

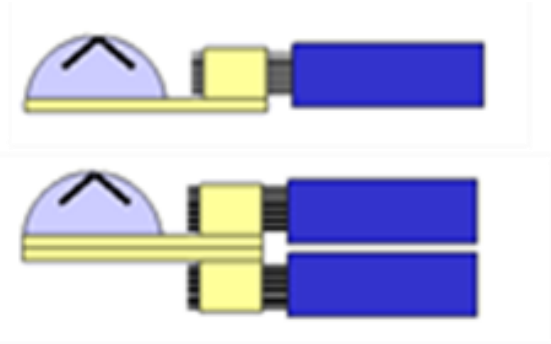
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
4. Wiring, Wiring connection	All is correct	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item]

Work Key Point	Picture	Reson	Effect
B : Is terminal insertion shallow or not? (If it is back-to-back positions, it'll be counted as 1 position)	<p>Must have no gap</p> 	It is cause of It easy to loose.	May cause of short circuit.


Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
4. Wiring, Wiring connection	All is correct	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item]

Work Key Point	Picture	Reson	Effect
C : Defective contact between the crimping terminals (Position that it is not surface contact)	<p>Surface must contact</p> 	<ol style="list-style-type: none"> 1. It easy to assembly with other terminal 2. It difficult to loose. 3. No gap when assembly. 	It is cause of short circuit.

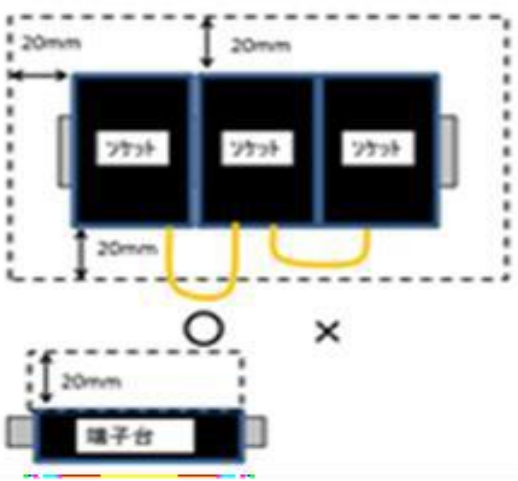
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
4. Wiring, Wiring connection	All is correct	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item]

Work Key Point	Picture	Reson	Effect
D : Have scratch on the wiring coating or not?		No carefully when cutting or wiring.	<ol style="list-style-type: none"> 1. It is cause of short circuit. 2. t is cause of electric shock accident.


Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
4. Wiring, Wiring connection	All is correct	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item]

Work Key Point	Picture	Reson	Effect
E : Wiring length is appropriate?		<div>1. It difficult to assembly at terminal</div> <div>2. It to loose.</div>	It is cause of short circuit.

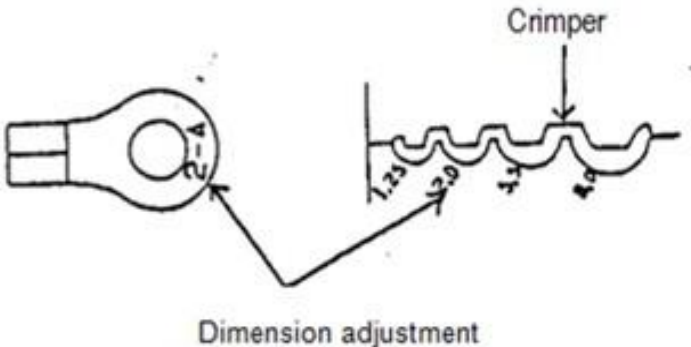
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
4. Wiring, Wiring connection	All is correct	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item]

Work Key Point	Picture	Reson	Effect
F : Have Serious inclination (slant) of terminal or not (Left and right, Up and down)		<ol style="list-style-type: none"> 1. It difficult to assembly other terminal 2. It easy to loose. 3. Not follow standard. 4. Not beautiful. 	It is cause of short circuit.

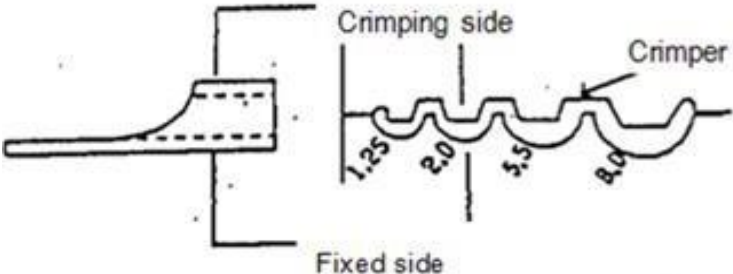
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
5. Crimping	All is within standard	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item] ✖ Scoring the total value of each item.

Work Key Point	Picture	Reason & Effect
A : Are crimping terminal and tools size appropriate or not?	<p>a. <u>Crimping size</u></p> 	Difficult to rewire

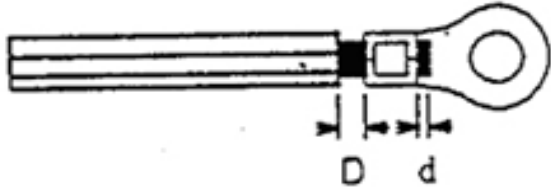
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
5. Crimping	All is within standard	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item] ✖ Scoring the total value of each item.

Work Key Point	Picture	Reason & Effect
B : Is crimping direction opposite or not?	<p>b. Crimping direction</p> 	Difficult to check

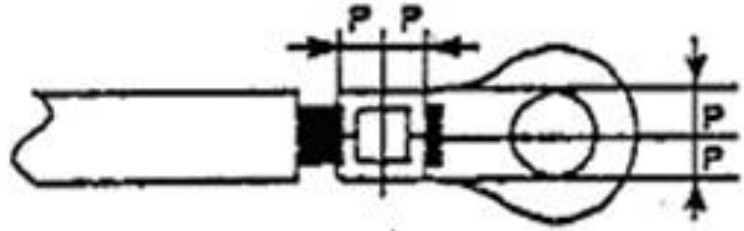
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
5. Crimping	All is within standard	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item] ✖ Scoring the total value of each item.

Work Key Point	Picture	Reason & Effect
C : Is protrusion (stick out) of core wire over or not enough or not?	<p>c. Core wire protrusion (stick out)</p>  <p>0. 5mm ≤ D ≤ 1mm 0mm < d ≤ 0. 5mm (Measure from directly above)</p>	If there is a lot of gas, it can cause a short circuit.

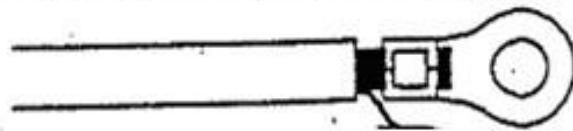
Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
5. Crimping	All is within standard	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item] ✕ Scoring the total value of each item.

Work Key Point	Picture	Reason & Effect
D : Does crimping position mismatch to left or right, forward and backward or not?	<p>Must not mismatch more than 1 mm. from the center</p> <p>d. Crimping position</p> 	It can short circuit

Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
5. Crimping	All is within standard	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more

[Checking item] ✖ Scoring the total value of each item.

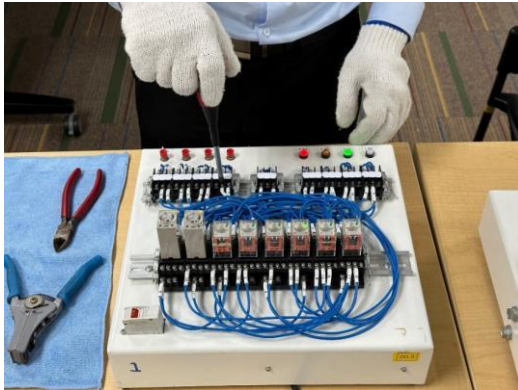
Work Key Point	Picture	Reason & Effect
E : Does wire stick out or wire break or not?	<p>e. Protrusion (stick out), breakage of wire</p> 	It can short circuit

Item	Ranking criteria				
	A rank	B rank	C rank	D rank	E rank
	0 point	1 point	2 point	3 point	5 point
5. Crimping	All is within standard	Defect 1 position	Defect 2 positions	Defect 3 positions	Defect 4 positions or more



[Checking item] ✕ Scoring the total value of each item.

Work Key Point	Picture	Reason & Effect
F : When we pull the wiring, will it come out or not?		It can short circuit

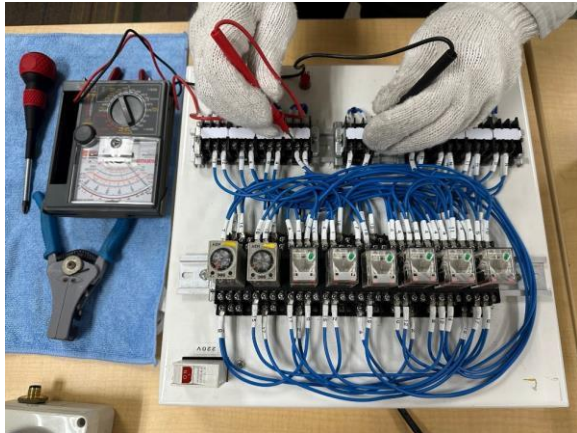
① Prohibited operation (5 points deduction / Time)

Work Key Point	Picture	Reson
A. Wiring work by turn on power supply (Adjustment, removing and putting relay, etc.)		
B. Exchange parts by not checking with tester, etc.		

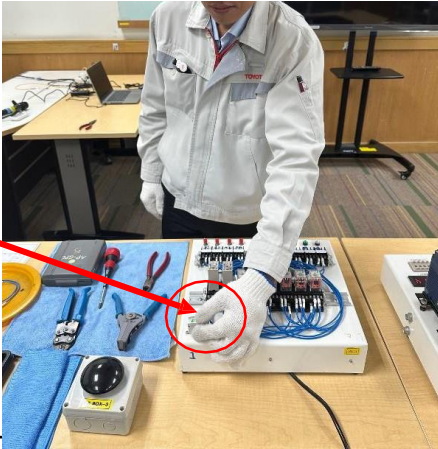

① Prohibited operation (5 points deduction / Time)

Work Key Point	Picture	Reson
C. Once remove relay, return timer.		
D. Operate/change troubleshooting bard, which already complete repair		

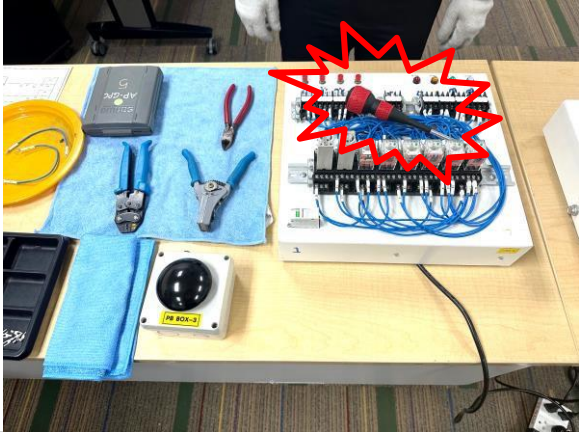

② Devices damage (3 points deduction / Time)

Work Key Point	Picture	Reson
<p>Damaged devices and tester during competition.</p> <p>But for unexpected failure, respond by lending not deducting the point.</p>		

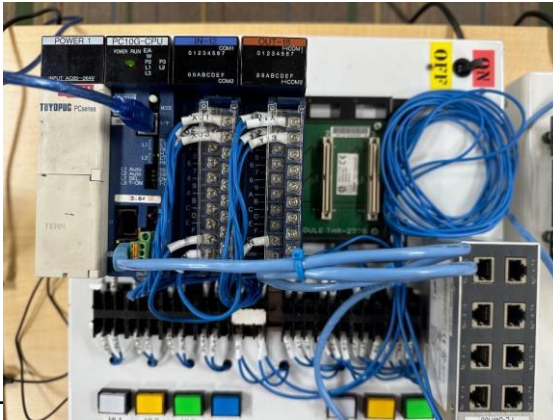

③ Note (3 points deduction) 1st time warning, 2nd,3rd,4th,5th time point out

Work Key Point	Picture	Reson
A. Operate by the left hand for power operation	<div>left hand</div> 	
B. Operate by putting tools into the pocket	<div>tool</div> 	


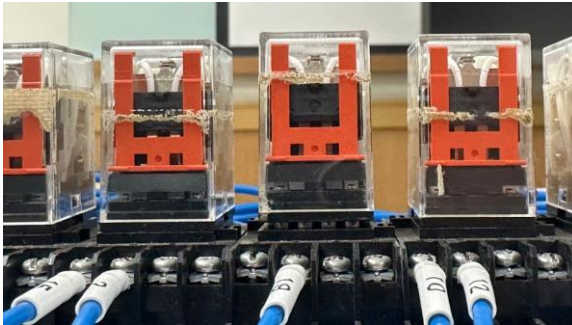
③ Note (3 points deduction) 1st time warning, 2nd,3rd,4th,5th time point out

Work Key Point	Picture	Reson
C. Put things other than tester on the devices or equipment.		
D. Intentionally drop foreign materials of the covered wire on the floor.		

④ Condition when submitting does not meet the condition (Each item ×1 point deduction)

Work Key Point	Picture	Reson
A. No alarm of PLC and RUN		
B. Put rubbish, defective devices, remaining wiring in the round plate. It must not stick out from the round plate.		

④ Condition when submitting does not meet the condition (Each item ×1 point deduction)

Work Key Point	Picture	Reson
C. Put tools on the waste cloth. Do not stick it out and do not put it over the other. 4S implementation according to the desk layout drawing.		
D. No relay & timer floating.		May be short circuit

Not wear PPE (3 Point deduction)

Work Key Point	Picture	Reson
① Protective eyewear		SAFETY
② Arm cover (working by short-sleeved)		SAFETY
③ Insulated gloves (voltage measurement)		SAFETY

Scoring [PLC Program]